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Supplementary Information

The Pt/g-C_3N_4-CNS catalyst via in-situ synthesis process with excellent performance for methanol electrocatalytic oxidation reaction

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Preparation of carbon nanosheets：

The anhydrous sodium carbonate powder is used as the hard template, and the carbon nanosheets are prepared by the chemical vapor deposition method. First, the Na_2CO_3 powder is put into a ceramic boat, and the boat is placed in a tube furnace. The Ar was then passed into the tube furnace. The heating furnace is heated to 700 ^oC at a heating rate of 10 ^oC/min. Hydrogen (H_2) and acetylene (C_2H_2) with a flow ratio of 5:1 are introduced into the furnace to deposit carbon nanosheets. The deposition reaction was maintained for 40 minutes, and then the furnace was naturally cooled to room temperature in an Ar-H_2 environment. The deposited product was washed with deionized water. Finally, powdered carbon nanosheets were obtained by drying the product at 80 ^oC for 24 hours.

Activity calculation process

Specific activity (mA/cm^2) values were calculated from the effective area of the electrode (cm^2) and the measured current I (mA) :

Specific activity = current density = I/V

Mass activity (mA/mg_{Pt}) values were calculated from the electrocatalyst loading m (mg) and the measured current density j (mA/cm^2) :

Mass activity = j/m

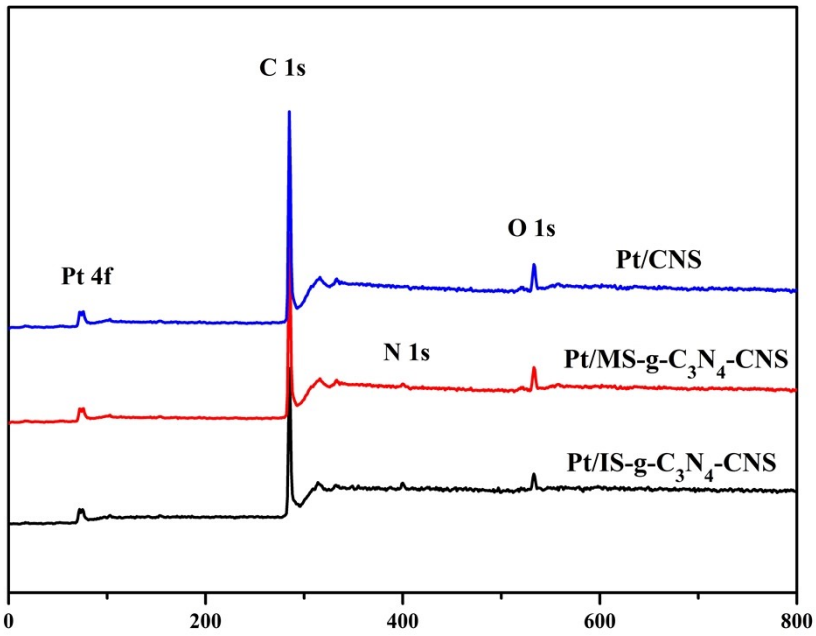

Fig. S1 XPS survey spectra of Pt/IS-g-C_3N_4-CNS, Pt/MS-g-C_3N_4-CNS and Pt/CNS.

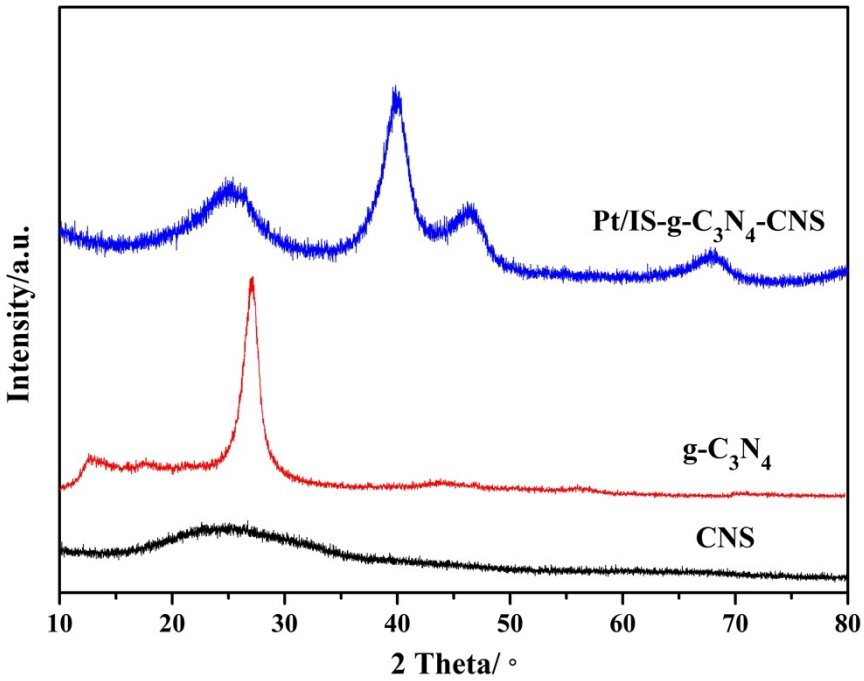

Fig.S2 The XRD patterns of Pt/IS-g-C_3N_4-CNS, g-C_3N_4 and CNS.

Table S1 XPS elemental analysis of Pt/g-C_3N_4-CNS samples.

Samples	C at.%	N at.%	O at.%	Pt at.%
Pt/IS-g-C_3N_4-CNS	90.09	3.57	5.31	1.02
Pt/MS-g-C_3N_4-CNS	90.36	2.89	5.62	1.13
Pt/CNS	93.18	--	5.58	1.24